

## 1 Claims

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3 1. An electrical connector comprising a male part  
4 and a female part for engagement therewith; the male  
5 part comprising a first terminal having a circular  
6 cross section and a second terminal;  
7 the female part comprising engaging means to engage  
8 said terminals;  
9 wherein the male and female parts each comprise a  
10 magnetic portion adapted to attract the parts  
11 together to form an electrical connection.

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13 2. A connector as claimed in claim 1, comprising  
14 magnetic misconnection means to prevent the male and  
15 female parts from connecting in a non-concentric  
16 position.

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18 3. A connector as claimed in claim 2, wherein at  
19 least some of a magnetic field emitted from at least  
20 one of the magnetic portions extends beyond the  
21 magnetic misconnection means to attract the parts  
22 together to form an electrical connection.

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24 4. A connector as claimed in claim 2 or claim 3,  
25 wherein the magnetic misconnection means comprises a  
26 wall extending away from the magnetic portion of one  
27 of the male and female parts, the wall being adapted  
28 to prevent the male and female parts from connecting  
29 in a non-concentric position.

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1 5. A connector as claimed in any preceding claim,  
2 wherein at least one of the male and female parts is  
3 attached to pendent means.

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5 6. A connector as claimed in claim 5, wherein one  
6 of the male and female parts is attached to pendent  
7 means and the other of the male and female parts  
8 comprises the wall.

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10 7. A connector as claimed in any preceding claim,  
11 wherein at least one of the magnetic portions is  
12 protected by a non-magnetic shield, such that when  
13 the male and female parts are connected together,  
14 the shield is interposed between the magnetic  
15 portions.

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17 8. A connector as claimed in any preceding claim,  
18 wherein the female part has a projecting portion  
19 which is adapted to be received within the male  
20 part.

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22 9 A connector as claimed in claim 8, wherein the  
23 magnetic portion of the female part has a magnetic  
24 field which extends beyond the projecting portion to  
25 attract the parts together to form an electrical  
26 connection.

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28 10. A connector as claimed claim 8 or claim 9,  
29 wherein the projecting portion is adapted to have a  
30 degree of freedom to pivot within the male part.

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1 11. A connector as claimed in any one of claims 8  
2 to 10, wherein the projecting portion comprises a  
3 lip which is adapted to closely fit with the male  
4 part.

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6 12. A connector as claimed in any one of claims 9  
7 to 11, wherein the projecting portion has at least  
8 one aperture to receive at least one of the male  
9 terminals.

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11 13. A connector as claimed in any preceding claim,  
12 wherein the first terminal is a neutral terminal and  
13 the second terminal is a live terminal and the  
14 engaging means of the female part comprise  
15 respective neutral and live terminals.

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17 14. A connector as claimed claim 13, wherein the  
18 neutral and live terminals of the female part are  
19 enclosed.

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21 15. A connector as claimed in claim 13 or 14,  
22 wherein the neutral and live terminals of at least  
23 one of the male and female parts are resilient.

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25 16. A connector as claimed in any preceding claim,  
26 wherein the male and female parts each include an  
27 earth terminal which are adapted to engage with each  
28 other.

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30 17. A connector as claimed in claim 16, wherein the  
31 male earth terminal is concentric with the at least

1 one of the first and second terminals of the male  
2 part.

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4 18. A connector as claimed in claim 16 or 17,  
5 wherein the male earth terminal has a greater  
6 diameter than the first and second terminals of the  
7 male part.

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9 19. A connector as claimed in claim 18 when  
10 dependent on any one of claims 8 to 12, wherein the  
11 female earth terminal extends through a side wall of  
12 the projecting portion.

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14 20. A connector as claimed claim 19, wherein the  
15 earth terminals of the male and female part are  
16 adapted to engage before any other terminals between  
17 the male and female part engage when the parts are  
18 being connected together, and wherein said earth  
19 terminals are adapted to disengage after all said  
20 other terminals have disengaged when the parts are  
21 being disconnected from each other.

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23 21. A connector as claimed in claim 20, wherein the  
24 terminals are adapted to engage in the order: earth,  
25 then neutral, then live when the male and female  
26 parts are being connected and are adapted to  
27 disengage in the order: live, then neutral, then  
28 earth when said parts are being disconnected.

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30 22. A connector as claimed in any preceding claim,  
31 wherein the magnetic portions comprise rare earth  
32 magnets.

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2 23. A connector as claimed in claim 22, wherein the  
3 magnetic portions comprise at least one of neodymium  
4 and samarium cobalt.

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6 24. A connector as claimed in any preceding claim,  
7 wherein the magnetic portions have a circular cross  
8 section.

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10 25. A connector as claimed in claim 24, wherein the  
11 magnetic portions are in the form of an annular  
12 ring.

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14 26. A connector as claimed in any preceding claim,  
15 wherein at least one of the male and female parts  
16 comprise removable means to allow for the removal of  
17 the magnetic portions.

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19 27. A connector as claimed in claim 26, wherein the  
20 removable means comprise an aperture provided in at  
21 least one of the male and female parts to allow for  
22 the removal of the magnetic portion(s).

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24 28. A connector as claimed in claim 25 or 26,  
25 wherein the removable means comprise a removable cap  
26 to allow for the removal of the magnetic portion(s).

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28 29. A connector as claimed in any preceding claim,  
29 wherein one of the male and female parts is also  
30 adapted for connection to a light bulb.

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1 30. A connector as claimed in any preceding claim,  
2 wherein the male and female parts are adapted to be  
3 attracted together to form an electrical connection  
4 when they are between 1cm and 30cm apart.

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6 31. A connector as claimed in any one of claims 1-  
7 29, wherein the male and female parts are adapted to  
8 be attracted together to form an electrical  
9 connection when they are between 2cm and 30cm apart.

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11 32. A connector as claimed in any one of claims 1-  
12 29, wherein the male and female parts are adapted to  
13 be attracted together to form an electrical  
14 connection when they are at between 5cm and 30cm  
15 apart.

16

17 33. A connector as claimed in any preceding claim,  
18 wherein at least one of the parts comprises a  
19 tapered face adapted to guide the parts together.

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21 34. A connector as claimed in any preceding claim,  
22 wherein the first and second terminals are  
23 concentric.

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25 35. A connector as claimed in any preceding claim,  
26 wherein the second terminal has a circular cross  
27 section.

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29 36. A connector as claimed in any preceding claim,  
30 wherein the second terminal is a pin terminal.

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1 37. A connector as claimed in any preceding claim,  
2 wherein the first terminal is an annular terminal.

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4 38. A connector as claimed in any one of claims 16  
5 or claims 17-37 when dependent on claim 16; wherein  
6 the male earth terminal has a circular cross  
7 section.

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9 39. A connector as claimed in any one of claims 1-  
10 33, wherein the first terminal is a pin terminal and  
11 the second terminal is a leaf terminal.

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13 40. A connector as claimed in claim 39, further  
14 comprising a resiliently mounted shutter.

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16 41. A connector as claimed in any preceding claim,  
17 wherein the male and female parts are adapted to  
18 engage with each other in any relative rotational  
19 orientation.